

# Confined Spaces

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# Outline

- What is a confined space
- Draft legislative requirements
- Hazards common to confined spaces
- Precautions

# What is confined space?

- An enclosed or partially enclosed space that:
  - is not designed for human occupancy (except for the purpose of performing work)
  - has restricted means of access and egress
  - may become hazardous due to its design, construction, location or atmosphere, the materials or substances in it or any other conditions relating to it

# Examples

- Tanks
- Manholes
- Boilers
- Furnaces
- Sewers
- Silos
- Hoppers
- Vaults
- Pipes
- Trenches
- Pits
- Water towers
- Ducts
- Tunnels



# Hazard Assessment

## Sub Section 509(1)

- “An employer shall perform an assessment of the work area to determine whether it contains a confined space”.

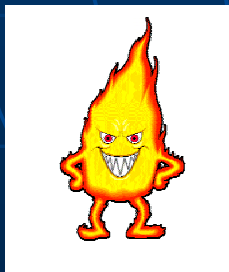
# Hazard identification, evaluation and control

- Must identify all the confined spaces at the site
- Label the spaces and restrict entry
- Sub section 509(2) – “An employer shall inform a worker who may have to work in a confined space of a hazard by posting signs or other equally effective means of advising of the existence of and dangers posed by confined spaces’

# Hazards commonly found in confined spaces

## Health hazards

- Oxygen deficiency
  - Less than 19.5%
  - 510.(3)(a)- Oxygen content must be between 20%-22%
- Oxygen enrichment
  - concentrations greater than 23%



## ■ Combustibles

- Consider the fire triangle

## ■ Toxic materials

- 510.(3)(c) - Workers exposure must be maintained at acceptable levels in accordance with the TLVs established by ACGIH
- E.g. H<sub>2</sub>S, CO





# Hazards commonly found in confined spaces

## Health hazards (continued)

- Noise
- Temperature
  - Hot or cold
- Process related – residual chemicals, release of contents of supply line
- Biological hazards
- Radiation

# Hazards commonly found in confined spaces

## Safety hazards

- Electrical hazards
- Engulfment/Entrapment
- Physical Configuration
- Barriers
- Mechanical hazards (moving parts)
- Low visibility
- Obstacles
- Restricted movement
- Animals
- Human factors



# Controls

- Development of plan to eliminate or control all identified hazards
- Must include training program for workers  
Section 510 (1)- "An employer shall ensure that a worker does not enter a confined space in which a harmful atmosphere exists or may develop until:
  - (c) the worker has been trained by the employer to safely enter and perform duties within the space
  - (e) set of written safe work procedures has been developed and workers have been instructed"

# Pre entry precautions

- Testing and evaluation of the atmosphere
- Purging and ventilation
- Isolating hazards:
  - Blanking off procedure
  - Clean out
  - Lockout procedures

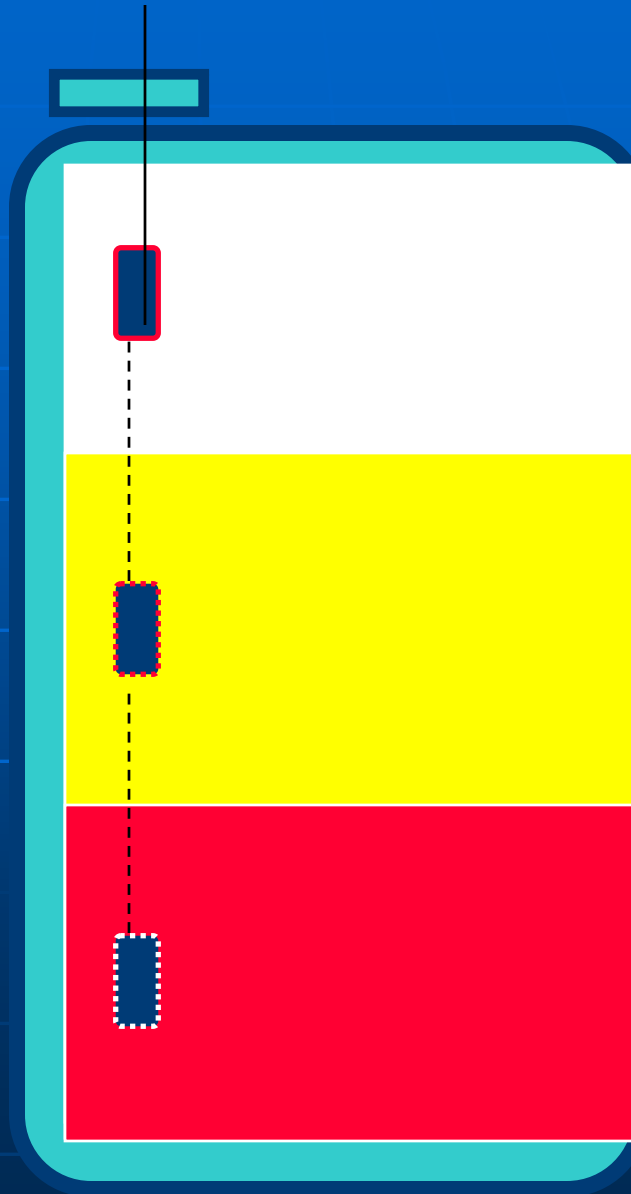
# Relevant legislation

- 510 (1) (b) – “ a test required under subsection (2) has been completed”
- 510 (1)(d) – “ a written work permit documenting the tests and safety precautions has been completed”
- 510 (6) – Permit must be available and must be posted at entry

# Where to test?

Always test the air at various levels to be sure that the entire space is safe.

**Good air near the opening does NOT mean there is good air at the bottom!**

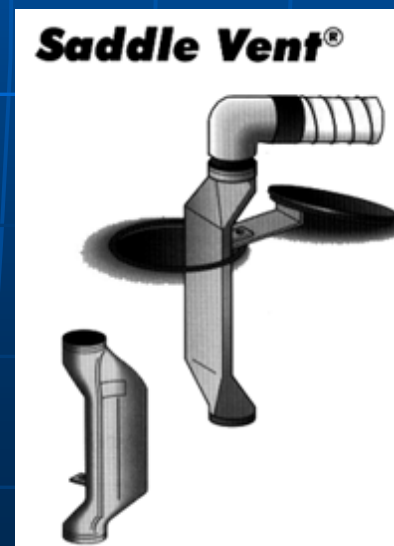


**Good Air**

**Poor Air**

**Deadly Air**

- Purging
- Ventilation
- Isolation
- Blanking Off
- Blinding



# Precautions for Safe entry and work

- Work Procedures
  - Section 511 – wearing appropriate retrieval equipment and using lifelines which is attended by a person at all times
- Roles and responsibilities of attendant
  - Section 511 – attendant is near the entrance and has been trained in ER response
- Communication between attendant and workers inside space
- Entry procedures



# Personal protective equipment

- Hazard dependent
- Proper selection, use and care depending on the hazards likely to be found in the space
- Part VII - PPE
- Section 512 – the space must be big enough to permit entry while wearing appropriate PPE

# Respiratory protection

- Depending on the potential hazards and the controls sometimes RP will not be needed
- Other times, RP will be required
- Two types:
  - Air purifying – disposable, half-face, full face
  - Air supplying – SCBAs and air line (Often carry 5 minute ER egress bottles)



Thank you!

Any questions??